

Wisconsin State Park System Nature Discovery Kit

Life Under The Ice



What's In The Kit?

Inside each virtual kit, you'll find lots of fun things to do while exploring the great outdoors.

Every two weeks, there will be a different topic and activities for you to do outside, whether it's in your backyard, at a local county park or at one of our many Wisconsin State Park System properties.

Download the current kit, then head outside to have some fun.

Here's What You'll Find In This Week's Kit:



Introduction - Find out about life under the ice.

Go Outside - Download fun scavenger hunts and experiments.

Crafts - Use simple household items to create crafts and art.

Snacks - Make tasty snacks.

Stories - Check out story books.

Live Lightly - Find out how to monitor the conditions of your local lake.

Games - Play fun fish games.

Journal - Print this week's journal page and tell us about your adventures.

Share The Fun!

Share photos of your crafts, snacks, journal pages and your exploration finds (and check out what others are doing, too) by using #OutWiGo on social media.

Life Under The Ice

What's Happening Under The Ice

What Do Fish Do?

Fish like lake trout, Northern pike, walleye and several types of panfish really like the cold. During the winter, they move into areas of the lake that are too warm for them in the summertime. You can find these fish hanging out in areas that provide the most food, oxygen and light. Muskellunge and many of the bass lay low during the winter. Even though they're moving around, they're pretty sluggish and only feed when they need to. Then there are fish that almost hibernate. Catfish, minnows and carp slow their breathing, barely move and rarely eat. Bullheads don't do much in winter and prefer to be buried in the sand, waiting for warmer waters to arrive again.



What Do Turtles Do?

Many turtles overwinter in the water and not on land. Because the water temperature stays consistent, the water actually protects them! Turtles are able to survive using a variety of adaptations. A turtle is cold-blooded, or *ectothermic*. Its body temperatures drops to match the water's. A turtle's metabolism will slow by as much as 99 percent, allowing it to survive without food or oxygen for up to 100 days! Normally, turtles breathe oxygen just like humans, into their lungs. However, when spending the winter under the water, they have to change how they breathe. Instead of breathing oxygen, a turtle will absorb oxygen through its skin, mouth and even its butt!



What Do Frogs Do?

Frogs become the *living dead* in winter. They head to the bottom of a lake or pond and lie on top of the mud or partially bury themselves. As the water starts to freeze, a frog freezes too. Its heart stops beating and it stops breathing. It appears dead, but it is still alive! To keep the ice crystals from damaging its organs, it concentrates a high amount of glucose (sugar) in its cells to keep its body from freezing completely; it works just like antifreeze! When the water warms up, the frog's frozen body also thaws, and its heart and lungs start working again. So, when you hear people talking about the living dead, you can tell them that the real living dead are frogs hibernating in the wintertime.



Life Under The Ice

An Icy Experiment

What You Need:

- Bottle of water
- Ice cubes
- Plastic tray or shallow metal cookie sheet
- Glass or ceramic bowl

What To Do:

- 1) Put your water bottle in the freezer for two hours. Set a timer to remind yourself to get it out! Lay it on its side for the best results, but try not to dent it.
- 2) Remove the water bottle from the freezer just before it freezes. You'll know its ready when crystals form when you jostle the bottle.
- 3) Place a ceramic bowl upside down on a flat-bottom tray to catch the water overage.
- 4) Place an ice cube on top of the upside down bowl.
- 5) Then SLOWLY pour from the bottle and watch while instant ice forms!



How It Works

The science behind this experiment lies in the freezing temperature of the water and how ice crystals form. When the freezing temperature is reached, the water molecules join together forming ice crystals. The process of starting the ice crystals is called “nucleation.” This starts from an impurity such as a dust speck or scratch on the water bottle. One ice crystal attaches to the imperfection, and the others grow on top. Isn't science cool?

How Ice Grows On A Lake

When a lake begins to cool, the surface water becomes more dense (heavier) and sinks, pushing warmer, lighter water up to the surface. This process continues until all the water in a lake drops to 39°F (4°C). When the air temperature drops below 39°F (4°C), water begins expanding and gets less dense as it gets colder.

The colder water floats to the surface and ice begins to form. If the winds remain calm, the lake will skim over with a thin sheet of ice. The longer and colder it gets, the thicker the ice.

Life Under The Ice

Winter Ice Bingo

Bundle up and head outside! How many different forms of ice can you find on your adventure?



Life Under The Ice

Animal Tangrams

What Is A Tangram?

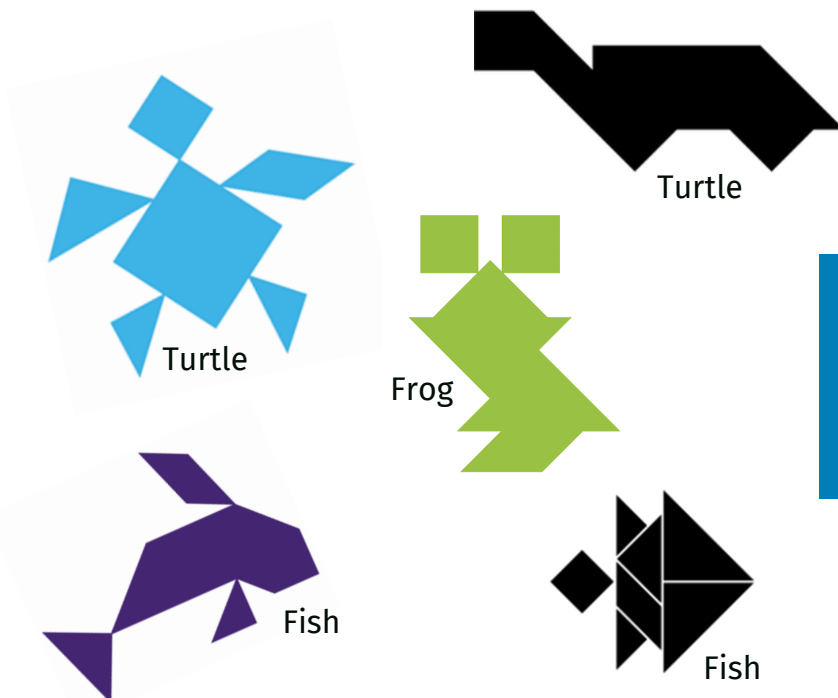
A tangram is a geometric puzzle consisting of a square cut into seven pieces that can be arranged to make various other shapes.

What You Need:

- Tangram shapes (see template on next page)
- Markers or crayons
- Scissors
- Your imagination!

What To Do:

- 1) Print out the template on the following page.
- 2) Use your markers or crayons to color the shapes.
- 3) Cut out the shapes.
- 4) Use your imagination to arrange the shapes to look like different animals that live under the ice!

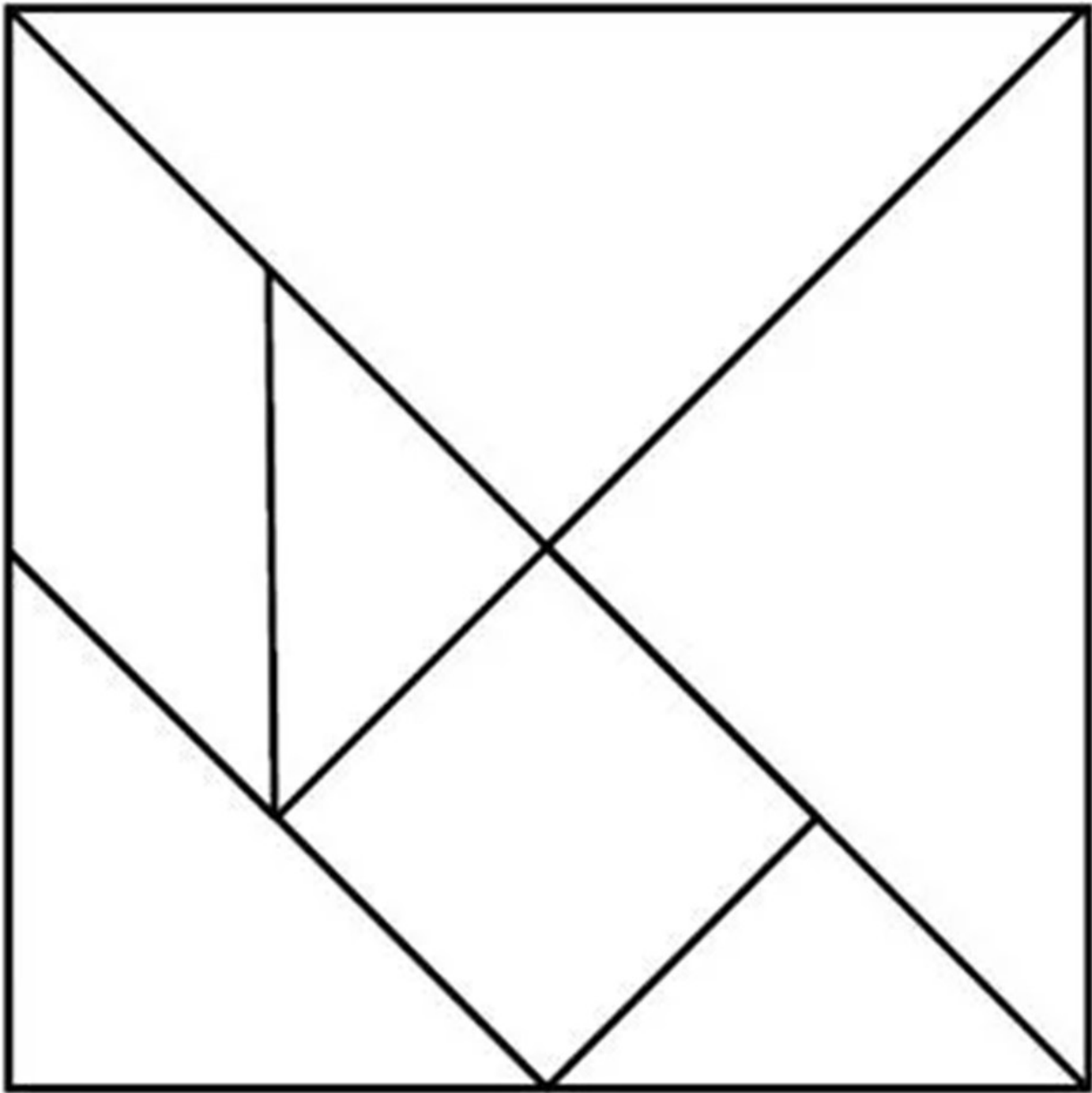


Did You Know?

Another name for cold-blooded animals is *poikilotherms*. Impress your teacher with that!

Life Under The Ice

Tangram Template



Life Under The Ice

Icy Decorations

What You Need:

- Dishes - e.g., a pie pan
- Natural items - berries, leaves, shells, sticks
- String or yarn
- Water

What To Do:

- 1) Fill your dishes with water.
- 2) Place your natural items in the water.
- 3) Add a piece of string or yarn so you can hang your decoration once it freezes. Make sure the string is long enough so half of it is submerged in the water and the other half is long enough to tie it onto something.
- 4) Place it outside to freeze.
- 5) Take the ice out of the dish and find a spot outside to hang your decoration for you to enjoy!



Colored Ice Balls

What You Need:

- Balloons
- Food coloring
- Water

Add a few drops of food coloring to the balloon and massage the balloon so the inside gets coated.

Place the end of the balloon over the tip of a water tap and slowly fill the balloon. The more water you add, the longer it will take to freeze.

Tie the balloon end shut. Place your balloons outside to freeze.

Life Under The Ice

Go Ice Fishing!

Whether you're looking for the excitement of the catch or the tranquility of a frozen lake, ice fishing can be a fun winter activity for you and your family to try. The best part about ice fishing is you don't need a boat to get you out on the "water"! If you are new to ice fishing, check your local bait store or State Park System Property to see what equipment they have for you to rent or borrow.

Making It Fun For The Whole Family

Be Open - Go into the adventure with an open and patient mindset.

Get The Kids Involved - Visit a bait shop to pick up minnows, snacks and refreshments. Let them help with scooping the slush out of holes and catching minnows out of the bait bucket.

Dress For The Weather - Make sure everyone is dressed for the weather. Let folks go inside a vehicle, shack or house to warm up when they get cold.

Bring Snacks - Bring food, snacks and beverages, but have a plan on how to take care of bathroom needs. A bucket and maybe a blanket to hold up to provide some privacy can work if you're fishing in a busy area.

Tip-Ups Vs. Jig Pole - Fishing with tip-ups is usually more successful than asking kids to sit on a bucket watching a hole. With tip-ups, they don't have to sit in one place and watch for a bobber to go down. However, if you have a good action lake for panfish and either a warm winter day or an ice shack, jigging is fun as well.

Other Activities - Have other activities for kids to do while waiting for a fish (e.g., kite flying, ice skating snow people building).

Tears Happen - Be ready for some tears when a fish is lost at the hole or no fish bite.

Take A Picture - Make a big deal about any fish the kids or first-timers do catch - any size or any species. Have a camera or your phone along - it makes a kid proud to get their picture taken with a fish. Again, any size or species of fish will do. With today's smartphones, you can also take video footage of the kids catching fish.

Be Ready To Leave - Be ready to leave when the kids are no longer having fun. If the kids aren't having fun, they are less likely to want to go again.



Life Under The Ice

Be Safe On The Ice

The Wisconsin Department of Natural Resources does not monitor ice conditions or ice thickness. The DNR urges all outdoor enthusiasts and ice anglers to first check with bait shops, fishing clubs, snowmobile clubs and outfitters for local ice conditions.

They will most likely have current information about lakes, streams and recreation areas. Early season ice conditions vary greatly due to temperature swings, even on the same body of water.

Remember, No Ice Is Safe - No matter what the month, the best advice to follow is that no ice is completely safe. Consider all ice unpredictable. Hidden cracks and changes in ice thickness are common.

Fish With A Friend - Go with a friend, if possible. It's safer and more fun.

Let Someone Know - Carry a cell phone in a waterproof bag and let people know where you are going and when you'll return.



Wear Ice Cleats - Wear creepers attached to boots to prevent slipping on clear ice. Spike-style are better than coils on glare ice.

Bring Ice Picks - Keep a pair of ice picks handy so you can pull yourself out, should you fall in. (See how to make your own on the next page). Include a rescue throw rope in your safety gear. Wear a life jacket or a float coat.

Know Your Lake - Do not travel in unfamiliar areas, especially at night. Know if the lake has inlets, outlets or narrows with currents that can thin the ice. Watch out for pressure ridges or ice heaves, often associated with thin ice and open water.

Life Under The Ice

Make A Pair Of Ice Picks

What You Need:

- Two 5-inch long, one-inch diameter dowels
- Two 4-inch long nails
- Parachute cord
- A drill
- A 3/8-inch drill bit
- Hack saw
- Metal file
- Hammer

What To Do:

- 1) Hammer a nail at least one inch into one end of the 5-inch dowel.
- 2) Use the hacksaw to saw off the head of the nail. File the nail to a point.
- 3) Drill a hole in the opposite end of the dowel. The hole should go all the way through the side. Do this for both dowels.
- 4) Thread and tie a length of parachute cord through the holes in the dowel ends so a pick is on each end of the rope in a "jump-rope" fashion. Your parachute cord should be at least 4 feet in length.

Keep them in an easily-accessible pocket or draped around your neck.



If You Fall Through The Ice

If you do break through, try to remain calm.

1. Turn in the water towards the direction you came from - that is probably the strongest ice.
2. Dig the points of the ice picks into the ice and while vigorously kicking your feet, pull yourself onto the surface by sliding forward on the ice.
3. Once out of the water, roll away from the area of weak ice. When a distance away, crawl further toward the direction you came. Rolling and crawling on the ice will distribute your weight to help you avoid breaking through again.

Once back on solid ice or land, get to a warm shelter, change into warm, dry clothing, and drink warm non-alcoholic, non-caffeinated drinks.

Life Under The Ice

Race To The Warmth

Dress For The Weather!

Before heading out to discover what's lurking under the ice, you'll want to dress for the weather. Wearing layers of clothes helps you stay warm and lets you take layers off so you don't get too hot!



What to do:

- 1) Gather up all your cold weather clothing. Check out the list below for ideas.
- 2) Stack everyone's clothing and gear in a big, mixed up pile.
- 3) When you're ready, yell "go" and have everyone run to the pile to find their clothes and gear. The winner is the one who can correctly get dressed the fastest!

Keep Warm In The Cold!

To be comfortable outside in winter, you want to keep your body dry from sweat and your clothes from getting wet from water or melting snow. If you get wet, you'll get cold much quicker.

Clothing Layers

Base Layer - Long underwear and thin socks

This layer should fit snug and wick moisture (sweat) away from your skin. Soft wool or a synthetic fiber are great for this layer. Cotton is not a good choice (in any layer). When cotton gets wet, it takes a long time to dry and can make you cold.

Middle Layer - Fleece pullover, wool sweater, fleece pants or sweatpants, thick socks

This puffy layer traps heat and continues to move moisture away from your body. Good material choices include fleece and wool.

Outer Layer - Coat, snow pants, hat, mittens, scarf, balaclava, boots, snow gaiters

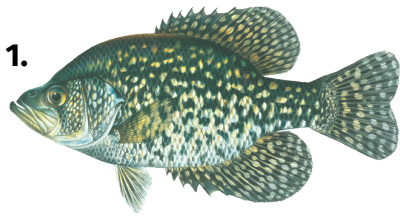
Remember that your fingers, toes, nose, ears and cheeks can become easily frostbitten, so they need special protection. Your outer layer should be waterproof to keep you warm and dry.

Life Under The Ice

Know Your Fish

How Well Do You Know Your Wisconsin Fish?

See how many fish you can identify from the pictures below.



Answers:

- 1. Black Crappie
- 2. Bluegill
- 3. Northern Pike
- 4. Walleye
- 5. Yellow Perch
- 6. Pumpkinseed
- 7. Lake Trout
- 8. Largemouth Bass

Life Under The Ice

Under The Ice Mobile

What You Need:

- Scissors
- Glue stick
- Large paper plate
- Scotch tape
- Paper punch
- String
- Crayons or colored pencils

What To Do:

1) Cut out the fish and aquatic plants on the next two pages using the dashed lines as a guide. Match up the pairs of pictures and glue the blank sides together. You will end up with two-sided fishes and plants. Color both sides of the pictures. You may want to add pictures of other plants and animals found under the ice.

2) Punch three holes evenly spaced around the edge of the plate and two holes, about a half an inch apart, in the center of it.

3) Cut three pieces of string - one 12-inches long, one 14-inches long and one 16-inches long.

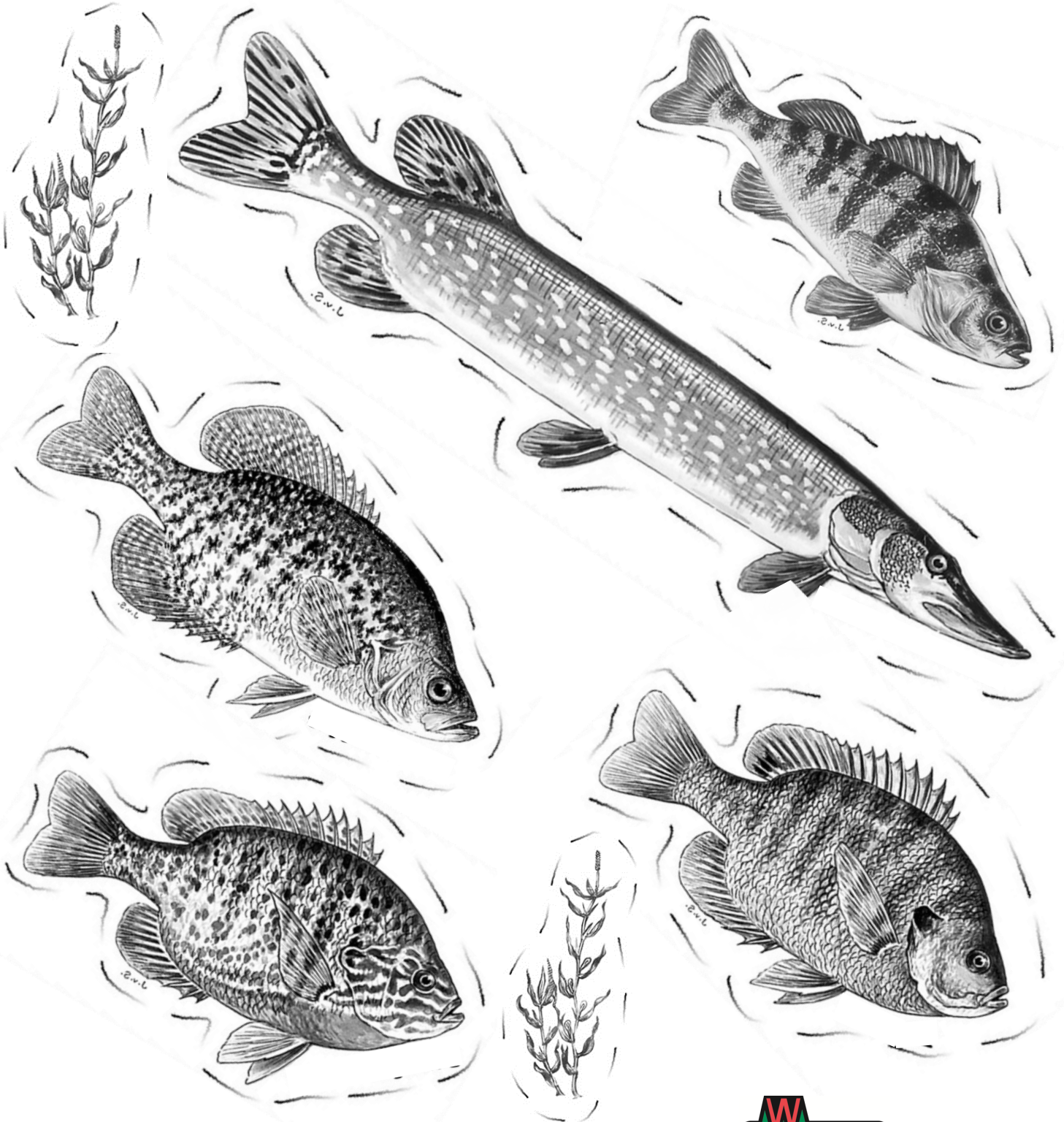
4) Tie one end of the string through one of the holes on edge of the paper plate; do this for the other two holes.

5) Tape the fish and the plants to the strings, at different heights, so they will not touch each other when hanging.



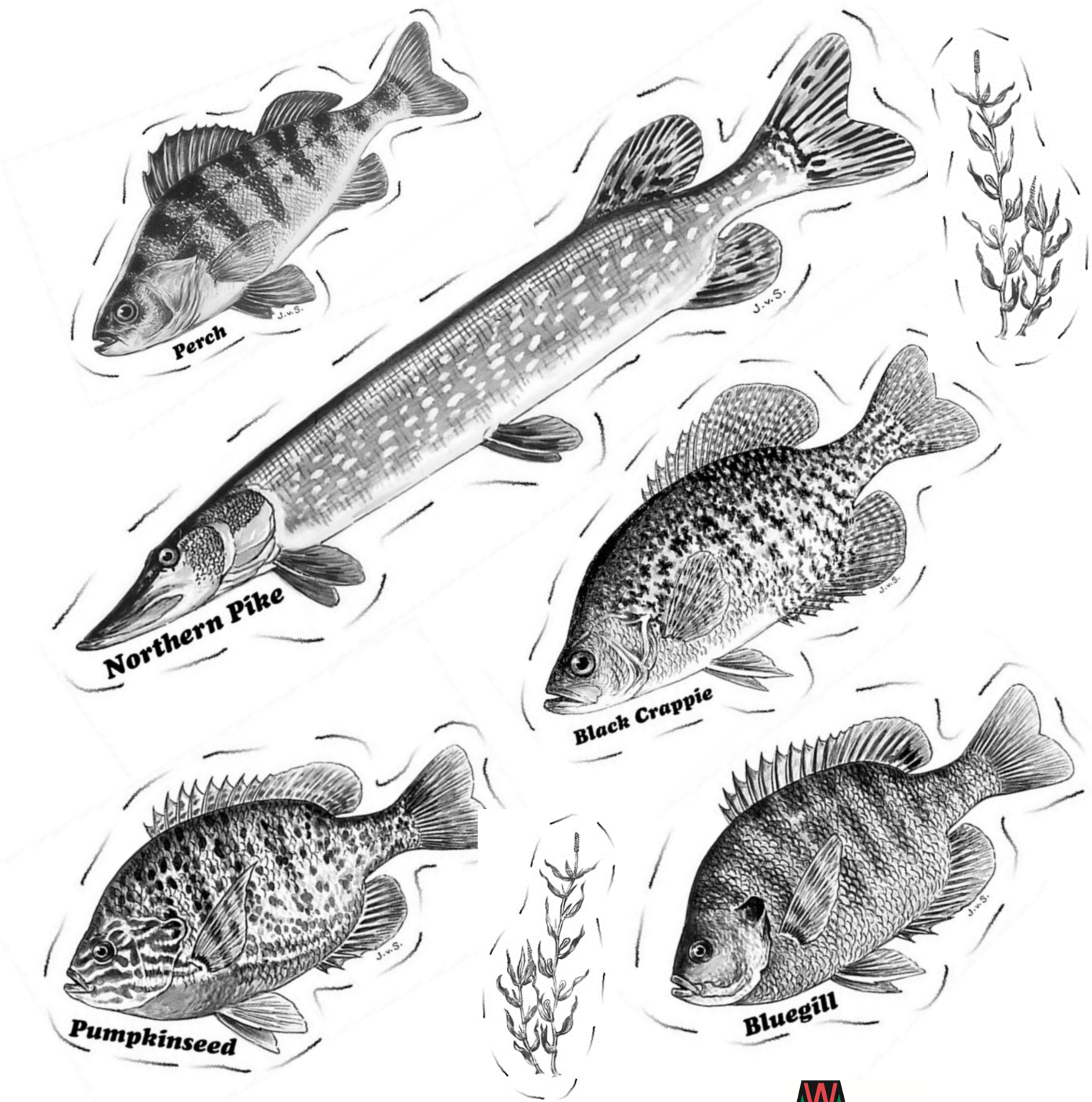
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Under The Ice Mobile



Life Under The Ice

Under The Ice Mobile












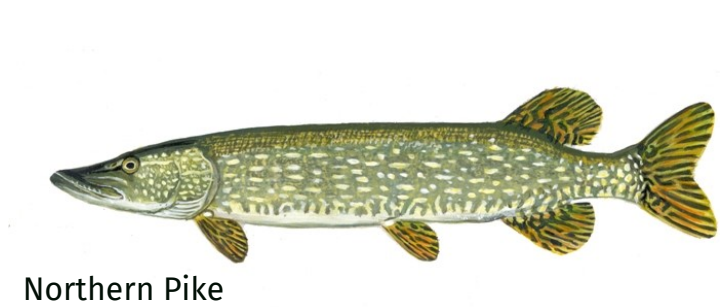
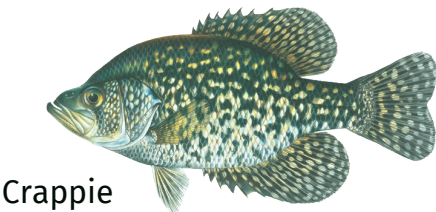
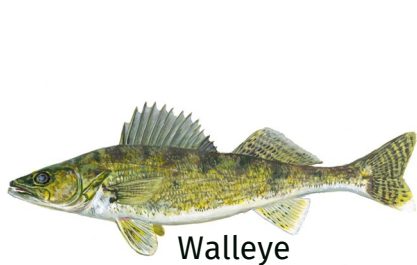
Life Under The Ice

What Do Fish Like?

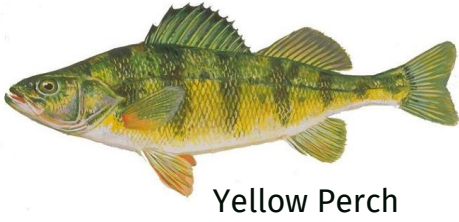
Draw a line to the bait you'd use to catch that species of fish.

Hint: a fish will eat more than one type of bait.

A. Waxworms  Larvae of wax or bee moths and are usually 1/2- to 1-inch long	B. Hellgrammites  Larvae of the dobsonfly and are up to 3-inches long	C. Mousees  Larvae of the dronefly and are to 2 1/2 -inches long
D. Spikes or Silver Wiggler  Larvae of house or blowfly and are usually 1/2-inch long	E. Wigglers  Nymph of the mayfly and are usually 3/4-inch long	F. Mealworms  Larvae of the darkling beetle and are usually 1-inch long
G. Goldenrod Grub  Larvae of goldenrod gall fly and are the size of a popcorn kernel	H. Fathead Minnow  These small fish are about 2 1/2-inches long	I. Shiner  These minnow are about 3 to 4-inches long



Answers:
Walleye: H, I
Crappie: A,B,C,D,E,F,G
Bluegill: A,B,C,D,E,F,G
Yellow Perch: A,B,C,D,E,F,G,H
Northern Pike: H, I



Life Under The Ice

Easy-Peasy Panfish Recipe

Ingredients:

- 1-pound of panfish, cleaned, scaled and filleted
- 1 egg, beaten
- 1 cup flour, fine breadcrumbs, cornmeal, crushed crackers, tortilla chips or cornflakes
- 1/2 teaspoon paprika
- 1/2 teaspoon garlic salt
- 1/2 teaspoon lemon pepper
- Canola or peanut oil

What To Do:

- 1) Rinse, then pat the fish dry with paper towel.
- 2) Mix the flour or other breading options with the seasonings in a large, shallow bowl.
- 3) Place enough oil to cover the bottom of a heavy frying pan to a depth of $\frac{1}{4}$ inch. Preheat the oil, but don't let it smoke.
- 4) While the oil is preheating, dip the fish in the beaten egg, then dredge through the breading mixture.
- 5) Shake off excess breading and carefully place the fish in the sizzling oil in the frying pan.
- 6) Fry over medium to high heat for about 2 minutes on each side then transfer to a paper towel to absorb excess oil. Fish with the bones in will take a little bit longer to cook.



Cleaning Your Catch

Use a spoon or fish scaler to remove scales. To fillet your fish, using a fillet knife:



Cut along the dorsal fin from head to tail.



Just behind the gill cover, make a vertical cut.



Cut the fillet by holding the knife nearly parallel to the rib bones and going from the head to the tail.

Life Under The Ice

High Energy Snacks

GORP Ingredients:

- 1 cup Cheerios toasted oat cereal (honey nut, plain and apple cinnamon work equally as well)
- 1 cup goldfish crackers
- 1 cup cherry-flavored dried cranberries (or other favorite dried fruit)
- 1 cup cashews or other favorite nuts
- 1 cup miniature M&M's chocolate candies (or other chocolate candy)
- 1 cup peanut butter chips or 1 cup butterscotch chips
- 1 cup miniature pretzel twists or pretzel stick

What To Do:

Mix everything together in a large bowl. Put your mix in a sealed container. Store in cool, dry area (to prevent melting of chocolate candies/chips and other soft ingredients).



Banana Energy Bite Ingredients:

- 1 overripe banana
- 1 cup dry quick-cooking rolled oats
- ½ cup roasted and salted pumpkin seeds (pepitas)
- ½ cup dried cranberries
- ½ cup peanut butter
- ¼ cup miniature semisweet chocolate pieces

What To Do:

In a medium bowl, mash banana with a fork until smooth. Stir in oats, pumpkin seeds, dried cranberries, peanut butter and chocolate pieces. Using 1 tbsp. for each bite, shape into 32 balls; flatten slightly. Chill until ready to serve.

Life Under The Ice

Life Under The Ice Resources

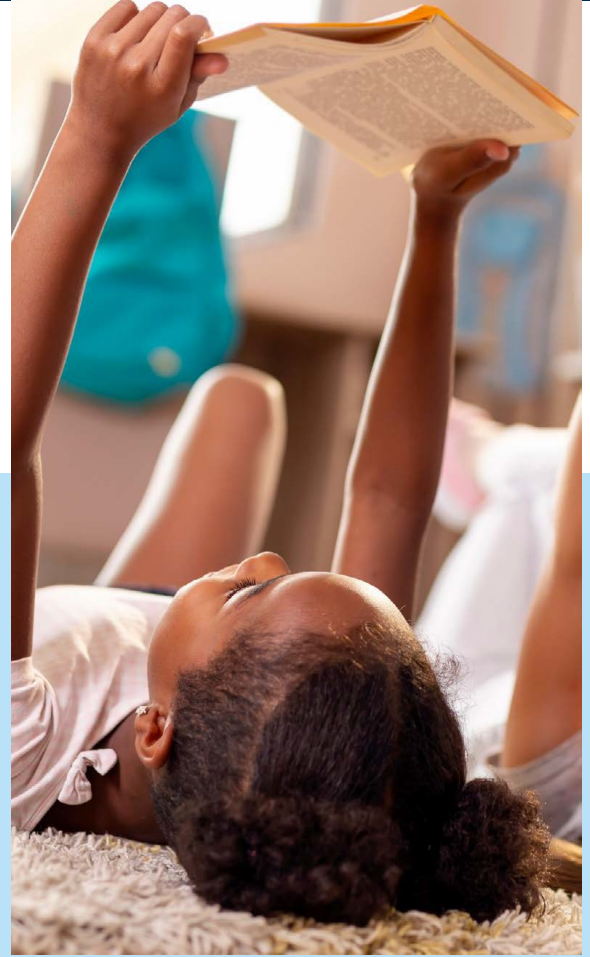
Life Under The Ice Books

Walter: Under The Ice by Bob Allen

Fishing With Grandma by Susan Avingaq and Maren Vsetala (Inuit story)

Milton And Odie And The Bigger-than-Bigmouth Bass by Mary Ann Fraser

One Frozen Lake by Deborah Jo Larson



Virtual Videos

- Learn how [fish survive](#) under the ice
- Find out why [ice floats](#)
- Discover how [ice forms](#) on a lake
- Learn more about [ice fishing](#)
- Did you know [frozen lakes “sing”](#)?
- Go [under the ice](#) to check out the fish
- Have fun [virtual ice fishing](#)
- Find some great tips for [ice safety and self-rescues](#)

Ice Fishing Reference Books

Adventures With Jonny: Ice Fishing! The Coolest Sport On Earth by Michael DiLorenzo

Ice Fishing by Bridget Heos

We're Going Ice Fishing by Nia Kennedy

1 2 3 Ice Fishing by Jenny Anderson

Hooked On Ice Fishing by Tom Gruenwald

Hooked On Ice Fishing II – Panfish by Tom Gruenwald

Hooked On Ice Fishing III – Game Fish by Tom Gruenwald

Life Under The Ice

Citizen Lake Monitoring Network

What Is The Citizen Lake Monitoring Network?

The Citizen Lake Monitoring Network, the core of the Wisconsin Lakes Partnership, creates a bond between over 1,000 citizen volunteers statewide and the DNR. Our goals are to collect high quality data, to educate and empower volunteers and to share this data and knowledge.



Volunteers measure water clarity, using the Secchi Disk method, as an indicator of water quality. Volunteers may also collect chemistry, temperature and dissolved oxygen data, as well as identify and map plants, report when ice is on or off the lake, or watch for the first appearance of Eurasian Water Milfoil near boat landings.

This effort began in 1999 when the University of Wisconsin-Madison Environmental Remote Sensing Center (ERSC) developed a model for the retrieval of water clarity data from satellite images and Citizen Lake Monitoring Network volunteers. The DNR continues to analyze data in this way today in its remote sensing program.

Want To Volunteer?

Contact your local [Citizen Lake Monitoring coordinator](#) or visit the University of Wisconsin - Stevens Point's [Citizen Lake Monitoring Network](#) to get started monitoring a lake near where you live.

Keep It Clean!

A great way to help your lake is to keep your fishing spot clean! When you're done fishing for the day, take a few moments to clean up your spot - take all garbage with you or dispose of it in a designated trash can/dumpster. Dispose of any unused bait in the garbage and don't dump your live minnows in the lake. This helps stop the spread of invasive species and aquatic disease that can harm our native species.

Wisconsin State Park System

Nature Discovery Kit

Tell Us About Your Adventures!

Use this page to draw and write about what you found while exploring the frozen waterways in your nature place this week.